

Scope of Work – Draft 12 August 2008

New Bedford Harbor Sediment Data Collection

- Task 1. Project Work Plans
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- Task 6. Consolidation & Permeability Testing
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Objective – The objective of this work will be to collect data that are necessary for modeling of proposed confined aquatic disposal (CAD) cells in New Bedford Harbor. The USACE Engineer Research and Development Center (ERDC) has reviewed the available project data that are relevant to modeling inputs and identified data gaps for which additional data are needed. Those data include sediment chemistry, pore water chemistry, sediment geotechnical properties, elutriate testing, consolidation testing, permeability testing, and sequential batch leaching data. Although there are extensive sets of data on New Bedford Harbor sediment, it is important to create and analyze composites that are representative of the annual projected sediment volumes for input to the model.

Background - For the purposes of this work, it has been estimated that the sediment to be placed into the CAD cells will be dredged in five phases. Analysis of the estimated volumes of each dredging management unit (DMU) along with known and projected dredging within management units were used to develop five groups of DMUs (see attached figures).¹ Three of these groups will use the upper harbor CAD cell (Table 1) and two will use the lower CAD cell (Table 2).

¹ For the purposes of this effort, some DMUs were considered to have been largely dredged and therefore are not included in any composite. In actuality, some relatively smaller volumes may be generated as result of final clean-up passes.

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~~Comment [ral1]: Is this the dredging schedule or volumes or contaminant conc.? Not sure what is meant.~~

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Table 1. Upper Harbor CAD Cell DMU Groups

Composite	DMU	Volume (CY)	Cumulative Volume
1	MU-3	14428	
	MU-102	35439	
	MU-103	11185	
	MU-5	8076	
	MU-6	21791	
	MU-7	26453	117372
2	MU-8	9146	
	MU-9	10351	
	MU-10	26144	
	MU-12	15700	
	MU-13	16297	
	MU-14	18954	
	MU-15	19635	116228
3	MU-16	22462	
	MU-17	18948	
	MU-18	17376	
	MU-19	5208	
	MU-104	11462	
	MU-105	8912	
	MU-20	4835	
	MU-21	5651	
	MU-22	3334	
	MU-23	6328	
	MU-24	6825	111340

Table 2. Lower Harbor CAD Cell DMU Groups

Composite	DMU	Volume (CY)	Cumulative Volume
4	MU-25	16495	
	MU-26	15877	
	MU-27	8993	
	MU-28	15107	
	MU-29	15062	
	MU-30	22427	
	MU-31	16591	
	MU-32	3815	
	MU-33	41025	155392
5	MU-34	20463	
	MU-35	52094	
	MU-36	11136	
	MU-37	42504	126197

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Task 1. Project Work Plans

Prior to conducting any field work, the contractor will prepare addendums to all existing project work plans, including the Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and Site Specific Safety and Health Plan (SSHP) associated with all field sampling and data collection as specified below. All plan addendums should be relatively minor in nature, focusing only on new work added in this SOW, and any changes to the existing sediment sampling or water quality monitoring programs. Addendums will be provided to the program manager for review within **xx** days of the notice to proceed. The contractor will revise and submit final addendums in response to comments from the program manager. If requested changes to the work plans are minor, field work may proceed prior to submission of the final work plans contingent upon approval of the program manager. In addition, the Contractor shall provide a detailed schedule for the completion of the scoped field and analytical tasks.

Comment [ral2]: Suggest 30 days

Task 2. Sample Collection

The contractor will collect gravity, piston, or vibra cores from 10 locations in each of five identified groups of dredging management units (DMU) to create five composite samples for analytical testing. Each composite sample will be created by taking cores from 10 locations to estimated dredging depth. A volume weighted, stratified random selection process will be used to select core locations within each group of DMUs (see figures). Cores from a total of 50 locations will be collected as part of this effort. Sediment from each of the 10 locations/group will be homogenized to create a single composite/group.

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Sufficient sediment will be taken in order to provide the necessary volume for the tests specified in the following tasks and to provide **xx** liters of sediment/composite to ERDC for sequential batch leaching testing to be conducted in Vicksburg, MS. The contractor will be responsible for packaging and shipping samples to ERDC. Samples should be shipped within **xx** hours of sample collection and preserved as identified in the QAPP/FSP.

Comment [PRS3]: We have a question here as to what would be preferred by the RPM? Duplicates or triplicates? Typically, the error range has not been large and duplicates could be run instead of triplicates. If we think that the partitioning will be similar between all of the composites, then no replication would be needed. We will need 5 liters per replicate per composite. Do we need to discuss replication with the group?

Comment [PRS4]: 7 days under refrigeration before shipping and 48 hours under refrigeration after compositing before shipping should be OK

Comment [PRS5]: 60 liters per replicate.

The contractor will also collect water from the locations of the two proposed CAD cells in NBH. Samples should be collected from the mid-water depth for background water quality to be analyzed in the following task. Additionally, the contractor will collect **xx** liters of water from these locations for delivery to ERDC. This water will be preserved and shipped by the contractor to ERDC as specified in the **FSP**.

Comment [ral6]: Do we want field parameters to be tested for also?

Task 3. Sediment & Aqueous Chemistry

Each of the five composites will be analyzed for bulk sediment concentration of Total PCBs (based on 18 PCB congeners as performed for baseline monitoring), Aroclor 1242, Aroclor 1254, Cu, **AVS**, Oil and Grease, TPHs, and TOC. Analytical methods will be consistent with the project methods used in recent, past sample efforts.

Comment [ral7]: Suggest spelling out AVS before using acronym

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Pore water samples will be extracted from a portion of the composite and analyzed for total and dissolved concentrations of Total PCBs (based on 18 PCB congeners), Aroclor 1242, Aroclor 1254, Cu, AVS, and Organic Carbon. Pore water samples will be collected using a refrigerated centrifuge and filtration method (Mudroch & Azcue 1995) or other approved method as proposed in the QAPP. Samples will also be analyzed for salinity, TDS, and TSS.

Comment [ra18]: TOC?

Water samples from the two proposed CAD cell locations will be analyzed for the same suite as the pore water samples.

Task 4. Elutriate Testing

The contractor will run Standard Elutriate Tests on each of the five sediment composites using the appropriate proposed CAD site water to predict short-term losses during disposal. The tests should analyzed for elutriate total and dissolved concentrations of Total PCBs (based on 18 PCB congeners), Aroclor 1242, Aroclor 1254, Cu, AVS, Oil and Grease, TPHs, Organic Carbon and also TSS. Analytical methods will be consistent with the project methods used in recent, past sample efforts.

Comment [ra19]: I'm not sure if Jacobs has performed elutriate testing on this project before. Suggest specifying method.

Task 5. Geotechnical Analysis

Each of the five composites will analyzed for geotechnical properties including water content, specific gravity, Atterberg limits, and grain size distribution. Analytical methods will be consistent with the project methods used in recent, past sample efforts.

Task 6. Consolidation & Permeability Testing

The contractor will conduct standard oedometer consolidation (ASTM D2435) and permeability tests on each of the five sediment composites to determine consolidation properties for the dredged material in the CAD sites and for seepage of pore water from the CAD sites.

Task 7. Reporting

The contractor will provide data reports for all of the above tasks by xx xxxxx 2008. Data reports are to be submitted in both MSWord and pdf compatible files. Data will also be submitted in MSEXcel or MSAccess compatible files. The contractor will also provide final electronic data deliverables that meet the format of the NBH project database. The contractor will be responsible for coordinating with the NBH data manager prior to report preparation to assure that data are formatted correctly. All final electronic data are to be provided by xx xxxxx 2009

Reference

Mudroch, A. and J. M. Azcue. 1995. Manual of Aquatic Sediment Sampling. CRC Press.

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